The Matagalpan Linguistic Stock of Central America.

By Daniel G. Brinton, M.D.

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Geographical.—A peculiar native idiom prevails—or fifty years ago did prevail—among the aboriginal population of that portion of the State of Nicaragua where are situated the city of Matagalpa and the towns of San Ramon, Muymuy, Sébaco and others in the department of Matagalpa; and in the towns of Telpaneca, Palacaguina, Yalaguina, Condega, Tologalpa, Somato Grande and others of the department of Segovia. That at one time it extended into the former department of Chontales is proved by the numerous geographical names which remain and by the traditions of those who yet speak it.

The people who use this idiom seem to have had no collective name of their own. They have been called by the Spanish writers, and by others who have followed them, "Chontales" and "Popolucas." It is now fully recognized by competent ethnographers that these terms have not, and never did have, any ethnic significance. They are borrowed from the Nahuatl language (spoken by the Aztecs and others), in which they are common nouns, *chontalli* meaning a rude, rustic person; *popolocatl*, a stranger or foreigner. Many different tribes, who did not speak Nahuatl, were so called both in Mexico and Central America.

Mr. E. G. Squier, in his description of the tribes and languages of Nicaragua, gives the location of a tribe of "Chontales," and adds a short vocabulary of their language,* which enables us to assign them without hesitation to the Ulvan linguistic stock, one widely different from which I present in this paper.

In the later work by Don Pablo Levy on Nicaragua, the author informs us that the Chontales spoke Maya and were descendants of the Phœnicians.[†]

In the *Correspondenzblatt der deutschen Anthropologischen Gesell*schaft, for September, 1874, is an article based on the researches of Dr. Carl Hermann Berendt, which distinctly repudiates the use of the term Chontal in an ethnic sense, and states that the Chontales and Popolucas at Nicaragua speak various tongues, having nothing

^{*} Squier, Nicaragua, Its People, Seenery, Monuments, Vol. i, p. 314 (New York, 1856).

[†] Notas sobre la Republica de Nicaragua, pp. 7, 208 (Paris, 1873).

else in common than that they are not Aztec, and, therefore, all were called by the Aztecs foreign and barbarous. The article further mentions that Dr. Berendt had succeeded in obtaining a vocabulary of the "Chontales of Matagalpa," and reported that, while he found in it various words identical with those in neighboring tongues, he saw no reason to believe it related to any of them.* The number of natives speaking it he estimated at 10,000 or 12,000.

Dr. Berendt never published any portion of this material, and after his death it came into my possession. I found it to consist of a vocabulary of ninety-four words and a few phrases furnished by the Rev. Victor Noguera, a priest ordained in 1853, and who had partially learned the tongue while curate at Matagalpa and San Jorge shortly after that date.

I studied it sufficiently to be persuaded that Dr. Berendt was probably right in considering it a tongue without genealogical relations to its neighbors, though deeply indebted to them lexicographically. These neighbors, I may here say, were the Nahuatl or Aztec on the south, the Lencan to the west, the Ulvan to the north and the Moscan or Musquito to the east. Other stocks are not far off, as the Chortis of Honduras speaking a Maya dialect, the Xicaques in the same State, and the Mangues in Nicaragua.

In accordance with this view, in my linguistic classification of the American race, published in 1891, I placed it as a separate stock, giving it the name of "Matagalpan." To illustrate its character, I inserted a vocabulary of sixteen nouns and the first five numerals.[†] Previous to this, in the Appendix to an article published in the *Compte-rendu* of the Congrés International des Americanistes of 1890, concerning the true meaning of the names Chontales and Popolucas and a specification of the diverse tribes included under them, I inserted a portion of Noguera's list.[‡]

Knowing the somewhat uncertain source of the material, and having no other authority with which to compare it, I deemed it insufficient for a special study. I am glad to say that now that difficulty has been removed, and I am able to present an enlarged and corrected vocabulary and a brief grammatic analysis of the tongue.

^{*&}quot; Doch giebt dasselbe keinen Anhaltspunkt für Schlüsse auf Verwandtschaft mit anderen Sprachen."

[†] D. G. Brinton, The American Race: A Linguistic Classification and Ethnographical Description of the Native Tribes of North and South America, pp. 149, 342 (New York, 1891).

[‡] Congrés International des Americanistes, Compte-Rendu de la VIII Session, pp. 556-563.

The material for this is supplied by an article from an intelligent instructor, Don Jeremias Mendoza, of Yoloaiquin, published in the journal *La Universidad*, at San Salvador, Central America, in June last (1895). The discovery was to me unexpected, as Mendoza's article is descriptive of the Indian town of Cacaopera, which lies in the Sierra of San Salvador, a hundred and fifty miles from Matagalpa; nor does he express any knowledge that the dialect of this mountain hamlet is identical with that of much of the native population of the departments of Matagalpa and Segovia in Nicaragua.

The village of Cacaopera is in the department of Morazan, sixteen kilometers from its capital, and is noteworthy for the tenacity with which its inhabitants have preserved the purity of their blood and also their ancient customs, usages and language. They have always occupied the locality, so far as written history goes. According to their own traditions, their ancestors before the conquest occupied a site about three kilometers to the west of the present village. At that spot an enclosure about one square kilometer in area is still visible, within which are mounds and ruins of ancient edifices. The ground is rich in fragments of pottery, some bearing "hieroglyphs" and painted figures upon their surfaces ; and fragments of carved stones have also been exhumed. This spot is known as the "pueblo viejo," old town.

These facts are important, both as showing the long occupancy of the region by these people and as evidence of the grade of culture they attained.

They number now about three thousand souls, most of whom are engaged in the cultivation of the maguey and the manufacture of ropes and cords from its fibres. These they color, and with them make hammocks, harness, halters, nets and the like, which are highly esteemed by their neighbors.

They are industrious and temperate, all good Catholics, of course, but mingling with the rites of the Church many strange elements from their ancient cult, as dances and masked dramatic performances.

PHONETICS.

The sounds of the tongue appear to offer little difficulty to a Spanish student. The words furnished by Mendoza are written according to the Spanish alphabet, the only point he notes being that the i and the k should be pronounced forcibly.

The words from Noguera are in the phonetic system devised by Dr. Berendt, which, as far as practicable, follows the Spanish values.

CONCEPT OF NUMBER.

As in most American languages, the idea of plurality is not expressed unless the content would be insufficient to convey it. Noguera gives : *Libra buyo*, two pounds. When expressed, it is by the suffix *guálkara*, as *guapueguálkara*, hats. This apparently means, "hats, many." The same construction is in the Musquito.

This suffix appears as an infix in pluralizing the pronouns; as

Sing., caraji, he. Plur., cara-gualcara-ji, they.

In an abbreviated form in the second person, e.g. :

Sing., maniji, thou. Plur., mani-gual-ji, you.

And probably still further incorporated in the first person:

Sing., yamiji, I. Plur., yam-ta-ca-ji, we.

As will be shown later, the plural of verbs is based on these pronominal forms.

The notion of exclusive and inclusive plural, or of the dual number, does not appear.

Concept of Gender.

There seem to exist but few independent words denoting sex. Even for "father" and "mother," the same term, *amis*, is employed (hence = "parent").

Where it is necessary to define the gender, the words, *apu*, male, and *mayrro*, female, are added, *e. g.*, *piyu-apu*, cock; *piyu-mayrro*, hen. The latter is almost certainly the Musquito, *mairin*, which has precisely the same grammatical use and significance,* and is a compound of the feminine *yorra*, with a prefix denoting "human."

PRONOUNS.

The personal pronouns are :

I, yami or yamiji. Thou, manijí. He, caraji. We, yamtacaji. You, manigualgi. They, caragual-caraji.

* Lucien Adam, Langue Mosquito, p. 12 (Paris, 1891).

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The possessives are :

Mine, Thine, His or other's, áyki; or, kikara. áyma; or, makara. áyni.

In construction, the possessive pronoun of the second form follows the thing possessed; as:

| My hat, | guapue kikará. |
|-----------|----------------|
| Thy dish, | barrán makará. |
| Thy hair. | kili makará. |

In the abbreviated forms, ke, my, ma, thy, they are postfixed to the nouns, forming, in connection with names of parts of the body, etc., inseparables; as is generally the case in American languages.

The personal pronouns have considerable similarity to those of the Musquito language, which are : *yang*, I ; *man*, thou. This resemblance extends also to the possessives, Mus., *lupi-ki*, son mine (my son); *mitam* (= *mita-m*), hand thy (thy hand, etc.) (Adam, *Langue Mosquito*, pp. 16–18).

The identity is so striking that it would induce me to claim a relationship between the two tongues, especially as they have certainly many other words in common; but as I have elsewhere pointed out, the personal pronouns and their derivations belong to a class of words which must be excluded from linguistic comparison for ethnographic purposes.*

The demonstratives are :

| This, | iraji. |
|-------|---------|
| That, | maniji. |

The second of these, it will be observed, is identical with the second person singular of the personal pronoun "thou."

Another demonstrative, which has sometimes the sense of a definite article is *múkare*. It is appended to names borrowed from the Spanish, as, drawers (Span. *calzones*), *kalsoma múkare*; but is not confined to these, as the name of the cotton tree is *man dapan múkare*.

The suffix *bas* appears to be another demonstrative of a similar character, as, *yorrabas*, the girl.

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^{*} See *Proceedings* of the American Oriental Society, March, 1894. I have there shown that there is an extensive physiological correlation between the sounds of many words and the concepts they denote, so that similarities or identities are almost sure to present themselves in stocks wholly disconnected.

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NUMERALS.

The numerals, as given by the two authorities, are as follows :

| | MENDOZA. | NOGUERA. | |
|----|----------|-----------|--|
| 1, | tibas, | bas. | |
| 2, | burro, | buyo. | |
| 3, | guadbá, | guatba. | |
| 4, | botarro, | bota'jio. | |
| 5, | panacás, | | |

These have some affinities with the Ulvan, but also such differences as to prevent us from supposing that they are identical.

CARDINAL POINTS.

These are expressed by phrases in this manner :

| North, huin-sal-náka; | literally, | "Wind, whence it comes." |
|-----------------------|------------|----------------------------|
| South, mari-kat; | 6.6 | "Sea, where it is." |
| East, lan sal-náka ; | 6 6 | "Sun, whence it comes." |
| West, lan-kannáanka; | 6.6 | "Sun, where it goes down." |

The word *mari* in the term for south is doubtless Spanish, these mountaineers probably in their ancient isolation being ignorant of the ocean.

CONSTRUCTION.

The subject precedes the verb and often stands in apposition to a pronoun, as:

Lan carají kánnaba, Sun, he goes down.

i. e., "The sun is going down."

The object may either precede or follow the verb.

| I am hungry (tengo hambre), | Sepá dainale (N). |
|-----------------------------------|-------------------------------------|
| Shall we cut maguey? | Guano sirru catjali? |
| I make a hammock, | Yamiji tati parri. |
| Take a seat, | Anda kulkane (N). |
| The girl held a dish in her hand, | Yorrabas dainate barrambas pánacam. |

The last word, *panacam*, should probably be analyzed as *panacam*, "hand-in-her," where postposition and possessive pronoun are incorporated with the noun.

Mendoza gives the following verse, composed by a native youth of Cacaopera. I add an interlinear translation of such words as are clear :

| Uppi | iraji | yálaka |
|-------|-------|-----------|
| Field | this | beautiful |

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| Guá | irri | gualirat | butatáguali. | |
|----------------|-------|-----------|--------------|----|
| Bire | ls | many | sing. | |
| Yo | rra | nananquis | dateale | |
| A g | girl | | is there | |
| $K\acute{a}ka$ | tukat | enquis | culaniquiyi | u. |
| | | | die. | |

Translation (of Mendoza). In this beautiful field, Where the little birds sing, There lives a young girl, For whom I am dying.

VERBS.

According to the examples given, the general formula of the verb is:

Separable pronoun + verbal theme + temporal index + inseparable pronominal suffix + numerical index.

The last mentioned is required in the plural only. The uniform personal inseparables are :

| SINGULAR. | PLURAL. |
|----------------------------|------------|
| 1.— <i>i</i> , <i>im</i> . | 1.—áca. |
| 2.— <i>am</i> . | 2.—ámbira. |
| 3.— <i>a</i> . | 3.—águali. |

These are derived from the separable personals by the processes of suffixation and elision; and the latter has been carried to such an extent that the original meaning of the suffix has been lost, and the separable personals are now prefixed. This is precisely the process of which we have so many examples in the Romance languages, and is one common to inflectional speech everywhere, if, indeed, it is not the origin of it.

The temporal indices are :

Present.—t. First past.—teal (or, tea). Second past.—l. Future.—jal (jam, ja, or j).

These are subject to various euphonic changes, and are to be explained as infixes denoting time suffixed to the verbal theme and worn down to their lowest phonetic expression. Brinton.]

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Substantive Verb.

As usual, in these tongues, we find no true substantive verb.

Maniji yalaca aycu caridá. Thou beautiful moon like. i. e., ''Thou art beautiful as the moon.''

But "to be in a place" (Span. *estar*) is expressed by the verb *datiali*. "I shall be," *dajini*; "you will be," *dajamámbira*.

INTERROGATIVES.

Specimens of these are :

| How do you do? (N.) | bátsigŭa bayamani? |
|-----------------------------|-----------------------------|
| Shall we go to the woods? | guano yurra ? |
| Shall we go to the river? | guano yelka? |
| Shall we go to cut maguey ? | guano sirrú cátjali ? |
| Shall we go to bring water? | guano l í yerájali ? |
| Do you want to work? | natánji tiquitguanán? |

Negatives.

The separable term for negative is *guaca*, no; but special negative forms appear to be employed in verbs, as:

| To wish, | nati. |
|-----------------|-------------|
| I do not wish, | naquisanca. |
| I did not wish, | natiala. |

These are not clear.

PARADIGMS.

To have (Sp. tener), dainati.

PRESENT.

SINGULAR.

I have, y. dáinati. Thou hast, m. dáinatam. He has, c. dáinata.

Thou hadst, m. dainateálam.

I had, y. dainateáli.

He had, c. dainatcála.

PLURAL.

We have, y. dainatáca. You have, m. dainatambira. They have, c. dainaláguali.

PAST.

We had, y. dainatcáca. You had, m. dainatealámbira. They had, c. dainatealáguali.

FUTURE.

I shall have, y. danajim. Thou wilt have, m. dain ijáman. He will have, c. dain ajáli. We shall have, y. danajamdaca. You will have, m. dainajamambira. They will have, c. dainajáguali. gualvajali.

Weeping, guálvata; To have wept, gualvanenala.

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| PRESENT. |
|----------------------|
| PLURAL. |
| 1, gualvatáca. |
| 2, gualvatámbira. |
| 3, gualvatáguali. |
| FIRST PASI. |
| 1, gualvateáca. |
| 2, gualvatealámbira. |
| 3, gualvateálaguali. |
| SECOND PAST. |
| 1, gualvatáca. |
| 2, gualvalambira. |
| 3, gualvalaguali. |
| FIRST FUTURE. |
| 1, gualvajaldáca. |
| 2, gualvajamámbira. |
| 3, gualvajáguali. |
| SECOND FUTURE. |
| 1. gualvanemtáca. |
| 2, gualvanemntábira. |
| 3, gualvanentáguali. |
| IMPERATIVE. |
| |

Weep thou, gualva maniji.Weep ye, gualvatambira manigualji.Let him weep, gualva cariji.Let them weep, gualvataca caragualcaraji

In the vocabulary, the words from the list by Noguera are marked with an N. Those not so distinguished are from the article of Mendoza.

VOCABULARY.

| Above, ruc. | Barranco, cusní. |
|--------------------------------------|---------------------------------------|
| Alcalde, huyá. | Basin, tapit. |
| Ant, N. sukale. | Beans, pác. |
| Anus, N. yukitu. | Beautiful, yálaca (root, yal or yala; |
| Arm, panamá; N. panake (má = | see Good and Bad). |
| thy; $ke = my$). | Bed, N. ukraske. |
| Armadillo, kisu (Ulva, kusih). | Before, tácan. |
| Arrow, N. sista (Musquito, trisba), | Behind, manacát. |
| Atole, cáurre. | Below, batie. |
| Ayote fruit, <i>ígua</i> . | Belly, N. puke (Ulva, bakio). |
| Bad, ferácaca (the root is fera; see | Bench (of wood), N. kul. |
| Good and Ugly). | Bird, guásirri , N. yulo. |

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Black, mulka. Bow, N. juip. Brasil wood, macár. Breasts, tatke (tat probably =mother; compare mamma in Latin). Cat, michi (a foreign word from Nahuatl). Chile, cumá. Church, teópan (a Nahuatl word meaning "sacred place"). Cloud, amú. Cock (fowl), piyú-apu (see 'Hen ;' apu must mean "male"). Cold, tústata. Color, kalortita (probably from Span. "color"). Cotton, dapan. Cunnus (fem.), N. su. Dark, rinnicá. Day, lántaca (from lán, sun). Dead, cúlam. Deer, yán; N. yau. Dish, barran. Dog, halu; N. sulo (Ulva, sulo; Xicaque, soyo ; Lenca, sui ; Musquito, yul; Carib, aule). Ear, N. topalke (Ulva, kupake). Earth, land, durrú; N. doyu (comp. Lenca, lu; Kiche, uleu; Maya, luum). Egg, N. ki. Enclosure, currál. (Span.) Enough, yalabesca. Eye, kunhán; N. kuñke. Eyebrows, N. nakila. Eyelashes, N. kilike. Father (parent?), N. amiske (given for both "father" and "mother;" e ke is a possessive; the Ulva has mamaski, mother; though the nearer relation may be to M. misa, man).

Female, yorra; N. yueiya (Carib, wiire; Musquito, yall, where the frequent r = l may appear).

Field, plain, úppi. Fire, laguáli; N. lauale. Fireband, N. jokane. Fish. 3 ál; N. yale. Fly, a ; N. sime. Foot, N. napake. Good, bácaca (the root is probably ba or bay; see Bad). Gourd, suna; another kind, N. gŭiia. Green, sásaca (Lenca, seega, blue). Hair, kilima ; N. kile. Hamack, parri. Hand, N. panake. Hat, guapúe. Hawk, assá. Head, guará; N. máike (two quite different words; guará may be allied to Lenca tohoro). Heat, N. guayuka. Hen, piyú-mayrro; N. boluko (the latter is the Ulva, lukuh; the terminal mayrro = female; see Cock). Hill, carrán ; N. kayan. Hillside, pálca. Horse, darráy; N. dréije. House, u; N. u (same in Ulva). How, caridi. Hunger, N. sepa. Iguana, N. jamai (Ulva, kasmah). Indian, dávi. Jar, tútu. Knee, N. suanke. Ladino, mulcám. Large, huilca ; N. baibaka. Leaf, mántaca (comp. Tree). Left, básaca. Little (poco), dánmisa. Lizard (garrobo), átuba. Maguey, sírru. Maize, aymá ; N. aima (Lenca, ama; Ulva, ham). Male (vir), misil; N. misa Misa Man, *ómba*; tali. (may be allied to amis, father. The

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Xicaque, homé ; Lenca, amashe, seem related. Tali is like Ulva alĭam. Meat (flesh), nacat; N. bubal (the former is Nahuatl nacatl.) Mezcal, siriúka. Money, N. yapá. Moon, áicu; N. haiko (Ulva, uaigo). Mouth, tamaguá ; N. tauake. Much, báybaya. Nails (of fingers, etc.), N. susuke. Nest (of bird), uyá. Net, N. guilije. Night, irranta. No, guaca. Nose, N. namke. Old, uskám. Owl, iskirri. Pain, acáguata. Penis, N. naske. Person, yavirra. Petticoat, yus; N. "manta," yus. Pigeon, útuyu. Pine tree, N. ku. Pine knot, N. ku (Nah. ocotl). Pitcher, inti. Plantain, pa. Pot, sarru (? Span. jarro ?); N. seia. Rain, N. guas, iya (Ulva and Lenca, guas = water). Red, lalá (Lenca, sheula). Ridge pole, lúbu. Right, áydica. River, yelka. Road (path), lap. Shore (bank), yelka uriaka.

Small, chiki ; N. kintxe. (Span.?) Snail, soni. Something, baybés. Soon, sás. Spittle, tahali. Storm, irra. Stone, appa; N. "piedra de moler" (comp. Xicaque, pai; Lenca, tupan; Musquito, ualpa.) Sugar cane, naná. Sun, lan; N. lal. Sweet, yayá. Tobacco, N. guilín (Lenca, gua; Musquito, u.) Tongue, N. tomamke. Tooth, N. ninike (Lencs, nigh or neé). Tortilla, hin; N. taska (the latter is Nahuatl, tlaxcatl). Tree, mán; N. man. Turkey buzzard, kúsma. Ugly, fiéraba. Uncle, N. kúkuke. Water, li; N. li (Musquito, li, liu). Wax, N. simila. White, saju (Lenca, shogo ; Xicaque, sæ). Wind, huin (Ulva, uin). Woman, mairro (Musquito, mairen). Work, tiquitguanan. Wood, dáne. Woods, yurra. Yellow, mayú. Yes, ende. Zapote fruit, tapá.

VERBS.

to arrive, *utúnajali*. to bathe, *idíguajali*. to carry, *yájujali*. to come, *ayrájali*. to cut, *cátjali*. to draw, *yakájali*. to draw, *dípajali*. to eat, dúri. to embrace, bilúejali (an embrace, biluka). to give miliaja (N. "give me"); niquia. to go, dihúnan; also, guate.

to go away, yaguatáguali.

to go down, kánnaba. to grind, güita. to have (tener), dáinati. to join, nacadúajali. to kill, culinájali. to kindle, páytijali. to laugh, ianaguate. to leave, dastaira. 414

to lift up, upútijali. to play, kútijali. to sing, buta táguali. to sleep, yábunajali. to take, sígjali. to wash, sácajali. to weep, guálbajali. to wish, natí.

OBSERVATIONS ON THE VOCABULARY.

Man and Woman.—The distinction between homo, vir and mas, seems to be represented respectively by omba or tali; misa or misil; and apu. Corresponding both to femina and mulier are yorra and mayrro; the former conveying also the notion of youth (joven). All these words have numerous similarities in sound to others of the same meaning in the dialects of central and northwestern South America, the Choco especially, in which "man" is ome or umu; "woman" muera, etc. Evidently mayrro is nothing more than omba-yorra, the general word for the human species with the feminine termination. That the m sound, in this as in so many other languages, is associated with the human, is to be explained by one of those physiological correlations of articulate speech, which I have discussed elsewhere*.

Dog and Cat.—The word for "dog" in the Central American dialects seems to be generally from the Nahuatl *chichi*. The following list shows the progressive variations:

| Nahuatl, | chichi. |
|-----------------------|--------------------|
| Tequistecan, | zigi. |
| South Mayan dialects, | chi,'tz'i.† |
| Lenca, | sui, shui, shushu. |
| Xicaque, | 80Y0. |
| Ulva, | sulo, sulúh. |
| Musquito, | yul. |

If these correspondences show derivation, the knowledge of the dog, along with its name, probably was derived from the Aztecan stock to the north. The pure Mayas had a wholly different word, *pek*.

* In the Proceedings of the American Oriental Society for March, 1894.

† Cf. Stoll, Ethnographie der Republik Guatemala, p. 55.

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The word for "cat" in most of the Central American tongues is some modification of the Nahuatl *mizton*, a diminutive of *miztli*, the term for the jaguar.

Maize and Its Products.—The word for "maize" in several Central American tongues is aima, and it has been plausibly suggested that it is from the Maya ixim.* The Matagalpan word for atole, *cáurra*, is certainly the Cakchiquel k'or for the same. There seems little doubt that the knowledge of this food plant extended to this tribe from those of Maya descent.

Addendum.

Since the above was in type I have received from Dr. Carl Sapper, of Guatemala, some words from the dialect of Cacaopera, collected by himself in 1895. I add them for the sake of comparison.

| Man, yévira. | Nose, nam. |
|--------------------|----------------|
| Woman, yóra. | Tongue, ducam. |
| Sun, laun. | Tooth, ninica. |
| Moon, aicŭ. | Hand, pana. |
| Fire, lavuale. | Foot, silin. |
| Water, <i>li</i> . | House, ŭ. |
| Head, guaráma. | One, dibas. |
| Eye, k'un. | Two, burru. |
| Ear, dupal. | Three, vuatpa. |
| Mouth, dacavŭa. | Four, botarru. |

Of these, the word for "man" is from the same root as that for woman; those for "mouth" and "tongue" are probably variants of those given in the vocabulary; while that for "foot" is a wholly different term. Dr. Sapper adds that at present there is no native word for "five."

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^{*}Consult on this subject the excellent monograph of Dr. John W. Harshberger, "Maize; a Botanical and Economic Study," in Vol i, of *Contributions from the Botanical Laboratory of the University of Pennsylvania* (Philadelphia, 1893). The linguistic evidence is given pp. 118-128.